



**UNIVERSITI PUTRA MALAYSIA**

**RESOURCE ALLOCATION IN PADDY FARMING UNDER DIFFERENT  
TENURE CATEGORIES IN TWO VILLAGES IN EAST JAVA  
INDONESIA**

**Mochamad Muslich Mustadjab**

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By  
Mochamad Muslich Mustadjab

A thesis submitted in partial fulfillment  
of the requirement for the degree of  
Master of Science (Resource Economics) in the  
Universiti Pertanian Malaysia

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Dedicated to  
my mother, my wife and sons :

Mrs. Roepi'ah H. Moekti,  
St. Djuwitaningsiah,  
Mohd. Rizal Widyaksono,  
Mohd. Rifki Widyahariadi,  
Mohd. Fahmi Widyanto.

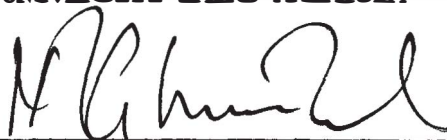
This thesis attached hereto, entitled "The Impact of Tenure on Productivity, Income and Resource Use Efficiency: The Case of Paddy Farming in East Java, Indonesia" prepared and submitted by Mochamad Muslich Mustadjab in partial fulfilment of the requirements for the degree of Master of Science, is hereby accepted.



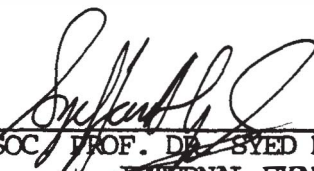
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## TABLE OF CONTENTS

|  | Page |
|--|------|
| ACKNOWLEDGEMENT  | v    |
| LIST OF TABLES   | vii  |
| LIST OF FIGURES  | x    |
| ABSTRACTS  | xi   |
| I. INTRODUCTION  | 1    |
| Land Tenure System in Indonesia                              | 5    |
| The Problem  | 10   |
| Objectives   | 12   |
| Organization of the Thesis                                   | 13   |
| II. THEORETICAL DEVELOPMENT AND EMPIRICAL STUDIES : A REVIEW | 14   |
| Theoretical Framework  | 14   |
| Empirical Studies on Land Tenure and Resource Allocation     | 23   |
| III. METHODOLOGY   | 29   |
| The Models   | 29   |
| Methods of Analysis  | 40   |
| Data Sources   | 43   |
| Limitations of the Study                                     | 47   |
| IV. GENERAL INFORMATION                                      | 48   |
| Pattern of Land Utilization                                  | 48   |
| Farm Size and Land Tenure                                    | 52   |
| Area of the Study  | 56   |
| Sample Characteristics                                       | 59   |
| V. RESULTS   | 62   |
| Productivity, Income and Resource Use                        | 62   |
| Production Function Analysis                                 | 71   |
| Resource Use Efficiency Analysis                             | 92   |
| Discussion of the Results                                    | 98   |
| VI. SUMMARY AND CONCLUSIONS                                  | 103  |
| Problem  | 103  |
| Objectives   | 103  |

|  |     |
|--|-----|
| Data and Analytical Methods            | 104 |
| Results                                | 104 |
| Policy Implications and Recomendations | 106 |
| LITERATURE CITED                       | 109 |
| APPENDICES                             | 112 |

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## LIST OF TABLES

| Table   | Page |
|---|------|
| 1. Paddy yield per hectare in South East Asian Countries in 1964 and 1978.  | 3    |
| 2. Indonesian imports of rice from 1975 to 1979.  | 3    |
| 3. The distribution of households according to land holding sizes in population census 1980.  | 6    |
| 4. Names given to share-cropping  | 9    |
| 5. Sharing arrangement between land-owner and tenant in six villages in West Java (1976).   | 9    |
| 6. The respondent of Geneng and Janti village of The Agro Economic Survey of Indonesia 1980/1981.   | 46   |
| 7. Distribution of paddy farmer respondents according to their tenure status in Geneng and Janti 1980/1981.                                       | 46   |
| 8. The average rainfall (in mm) of selected locations in Java 1931-1969.  | 49   |
| 9. Harvested area of principal food crops in Indonesia.   | 51   |
| 10. Number of farms, farm area, average farmsize and degree of fragmentation, Indonesia 1973.   | 54   |
| 11. Patterns of land utilization in Geneng and Janti 1980/1981.   | 57   |
| 12. Distribution of family members according to age category in a hamlet of Geneng and Janti 1981.  | 60   |
| 13. The sample average of productivity per hectare in Geneng in the 1980/1981 wet season.   | 63   |
| 14. The sample average of the use of fertilizer per hectare in paddy farming in Geneng in the 1980/1981 wet season.                               | 65   |
| 15. The sample average of current input use per hectare in paddy farming under different tenure categories in Geneng in the 1980/1981 wet season. | 66   |
| 16. The sample average of paddy farmsize of different tenure categories in the 1980/1981 wet season.  | 66   |
| 17. Summary of the sample average of input use per hectare paddy farming under different tenure categories in Geneng in the 1980/1981 wet season. | 68   |



|  |    |
|--|----|
| 18. The sample average of net income per hectare of paddy farming under different tenure categories in Geneng in the 1980/1981 wet season.   | 69 |
| 19. The sample average of annual per capita income of farmer under different tenure categories categories in 1980/1981.  | 70 |
| 20. Estimated Cobb-Douglas production function based on model 1.1. in East Java Indonesia 1980/1981.   | 74 |
| 21. Estimated Cobb-Douglas production function for paddy per hectare based on model 1.1. in East Java, Indonesia in 1980/1981.   | 75 |
| 22. The estimated Cobb-Douglas production function for paddy based on model 1.2. and 1.3. in East Java, Indonesia in the 1980/1981 wet season.   | 80 |
| 23. Estimated Cobb-Douglas production function for paddy farming per hectare based on model 1.2 and 1.3.   | 81 |
| 24. The estimated Cobb-Douglas production function for paddy based on model 1.4 and 1.5. in East Java, Indonesia in the 1980/1981 wet season.  | 83 |
| 25. The estimated Cobb-Douglas production function for per hectare paddy farming based on model 1.4. and 1.5.  | 84 |
| 26. Estimated production function based on model 2.1. for pure owners and pure tenants (with dummy for land input and human labour input ) in East Java, Indonesia in the 1980/1981 wet season.          | 86 |
| 27. Estimated per hectare production function based on model 2.1. for pure owners and pure tenants (n=92).   | 87 |
| 28. Estimated production function for paddy based on model 2.2. for pure owners and pure tenants (with dummy for land input and human labour input) in East Java, Indonesia in the 1980/1981 wet season. | 90 |
| 29. Estimated production function for per hectare paddy farming based on model 2.2. for pure owners and pure tenants (n=92).   | 91 |
| 30. Geometric mean of inputs and output.   | 94 |
| 31. Marginal physical product of inputs at the geometric mean level.   | 94 |
| 32. The average market price of per-unit input and output.   | 95 |
| 33. Marginal value products of inputs at the geometric mean level.   | 95 |

34. Ratios of marginal value product to factor costs.

96



## LIST OF FIGURES

| Figure   | Page |
|--|------|
| 1. The tax equivalent approach   | 19   |
| 2. Production function for owners and tenants<br>(after transformation in logs). | 21   |

## ABSTRACT

The present study provides empirical evidence on resource allocation in paddy farming under different tenure categories based on data collected from 105 paddy farms by The Agro Economic Survey of Indonesia (SAE), for the 1980/1981 wet season at two villages in East Java.

To observe resource allocation in different tenure categories, Cobb-Douglas production function analysis was employed by introducing dummy variables for owner operator, fixed rental and mixed tenant. In this analysis the assumption that no difference exists in the slope of production function between share tenant and the other three tenure categories was made. A dummy variable for village was also introduced to examine differences in production functions between the two villages being studied. The difference between pure owner and pure tenant in terms of their constant terms or efficiency parameter and output elasticity of input or slope of the production function was also observed in this analysis.

Analysis of resource use efficiency was done by using the ratio of Marginal value product (MVP) to its marginal factor cost to examine the allocation of the resources in paddy farming under different tenure categories.

Results obtained from Least Square estimates based on the Cobb-Douglas type production function indicated significant differences between share tenant farms in their production function. Share tenant appeared to be in the lowest category in their paddy production, while the highest was mixed tenant followed by owner operator and fixed rental farms.

Between pure owner and pure tenant there were significant differences in their constant term and their slopes of production function with respect to land and human labour input. This implied that there were significant differences in their land and human labour productivity. Pure owner appeared to be more productive in using their land input relative to pure tenant, and tenant appears more productive in using their human labour input than pure owner.

Paddy farm income of share tenant was observed to be the lowest relative to the other tenure categories (significant at 1%). The average annual per capita income also appeared to be the lowest as compared to owner operator or fixed rental farmer, although statistically was not significant.

Analysis of resource use efficiency indicated that for all categories of tenure input factors were inefficiently allocated. This implied that re-allocation of resources would have important impact on the yield of paddy. In this analysis, it was observed that hired human labour and current inputs, which

consist of expenses on seed, insecticide, fertilizer and the rent of sprayer, were used below optimum levels.



## I. INTRODUCTION

The significance of agriculture in the Indonesian economy is underscored by the fact that some 70 per cent of the total population are employed in that sector. The agricultural sector accounts for the largest share of the total Gross National Product (GNP). In 1979 the share was 28 per cent. The sector also contributes the largest share of the total export earnings, after petroleum (Sumitro et al, 1980). That is why the emphasis of economic development in this country is directed towards the agricultural sector.

Agricultural development involves improvements in the productivity of resources employed by farmers (Crosson, 1970:1). The rate of increase of agricultural productivity depends upon the rate at which improved inputs are incorporated into production processes at the farm level.

Among the main objectives of agricultural development in Indonesia are to secure an increase in food production and to bring about improvement in farmer's income. From 1964-1978, the Government through various program such as Bimas<sup>1</sup> has successfully

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Bimas or Bimbingan massal (mass guidance) is basically a coordination of extension and credit to encourage farmers to use a recommended package of rice technology consisting of improved varieties of seeds, use of fertilizer, use of pesticides and rodenticides, improved irrigation facilities and better cultivation methods.

increased the yield of paddy by an average of 2.8 per cent annually, i.e. from 2,025 kilograms in 1964 to 2,886 kilograms per hectare in 1978, which is the highest yield within South East Asian countries as shown in Table 1.

However, relative to population growth from 1964 to 1978 this increase in productivity is still low, considering an average population growth rate of 3.07 per cent per year during the same period. That is why the import of rice into this country is still on the rise. From 1968 to 1975, the annual rice imports averaged almost 0.86 million tons of milled rice, equivalent to 6.3 per cent of average annual rice production in that period (Mears, 1976:100), and it was feared that due to the growing population coupled with low productivity, rice self-sufficiency would not be realized even by 1985 (Mears, 1976:119). The imports of rice into this country from 1975 to 1979 are shown in Table 2.

Relative to "potential farm yield" the average yield per hectare of 2.88 ton is quite low. According to Sri Widodo (1977), there are two gaps in the rice yield, i.e. :

Gap I : The gap between "experiment station yield" and "potential farm yield".

Gap II: The gap between "potential farm yield" and "actual farm yield".

Table 1 : Paddy yield per hectare in South East Asian countries in 1964 and 1978.

| Countries            | 1964 (kg/Ha) | 1978 (kg/Ha) |
|----------------------|--------------|--------------|
| Burma                | 1,709        | 2,015        |
| Indonesia            | 2,025        | 2,886        |
| Cambodia             | 1,067        | 1,063        |
| Laos                 | 802          | 1,378        |
| Malaysia (Peninsula) | 2,405        | 2,520        |
| Philippines          | 1,248        | 2,077        |
| Thailand             | 1,943        | 1,953        |

Source: Palapac, Adelita C. "World Rice Statistics". The IRRI Dept. of Agricultural Economics. 1980 :18.

Table 2 : Indonesian imports of rice from 1975 to 1979 (metric ton)

| Year | Quantity |
|------|----------|
| 1975 | 673      |
| 1976 | 1,293    |
| 1977 | 1,989    |
| 1978 | 1,845    |
| 1979 | 2,350    |

Source : Palapac, Adelita C."World Rice Statistics". The IRRI Dept. of Agricultural Economics. 1980:100.

In his experiment in 1974/1975, the second gap was stated as being at 0.5 ton per hectare to 0.7 ton per hectare for the dry season. In the rainy season the gap was found to be greater, i.e. 1.2 - 1.4 tons per hectare. The data implies that there are still great possibilities of securing increases in paddy yields.

From 1968 to 1975 the annual average rice area in Indonesia was about 8.25 million hectares, while in Java the figure was about 4.46 million hectares, which means that almost 54 per cent of the nation's rice hectarage is concentrated in Java (Mears, 1976). In terms of annual rice production, Java contributed more than 60 per cent of the nation's annual production of 13.65 million tons of milled rice during that period (Mears, 1976:104).

Because 91.3 million or about 70 per cent of the total population of Indonesia live in Java, which comprise only 7 per cent of the total land area of the nation, the food problem among other things seems to be 'how to increase the rice output per unit of land'. In other words, increasing the rice productivity should be the basic strategy for solving the chronic food deficit of the country.

## Land Tenure System in Indonesia

In most studies of land policy in Asian nations there is a general recognition that agriculture is beset by problems of landownership and land tenancy.

According to the 1980 population census, only 28.3 per cent of the households in Indonesia or 4,935,162 operated their own farms larger than 0.5 hectares, 45.3 per cent of them or 7,914,305 are operated their own farm less than 0.5 hectares. The distribution of households according to their land-holding sizes are presented in Table 3 (Perhepi, 1982:22).

Java as a principal rice producing island of Indonesia, has a relatively small number of absentee landlords with most land-owners owning small patches of land and living in the village, unlike other South East Asian rice-producing rural areas. According to the 1963 Agricultural census, there were only 3,498 persons in the whole of Java who owned more than 10 hectares of paddy fields. It is surmised that Javanese problems of land tenure had already grown during the colonial period, for commercial economy must surely have gradually insinuated into rural societies early, and the bases of rural conflicts could not have suddenly sprung forth from nowhere during the short period following the countries independence (Kano, 1977:2).

Table 3 : The distribution of households according to  
land holding sizes in population census 1980

| Farm size and Tenure                  | No. of household  | %           |
|---------------------------------------|-------------------|-------------|
| <u>Less than 0.5 hectares</u>         | <u>11,027,653</u> | <u>63.1</u> |
| Own Land                              | 7,914,305         | 45.3        |
| Combination of own land<br>and others | 1,018,048         | 5.8         |
| Non-own land                          | 2,095,300         | 12.0        |
| <u>Larger than 0.5 hectares</u>       | <u>6,440,907</u>  | <u>36.9</u> |
| Own Land                              | 4,935,162         | 28.3        |
| Combination of own land<br>and others | 999,254           | 5.7         |
| Non-own land                          | 506,491           | 2.9         |
| Total                                 | 17,468,560        | 100         |

Source : 1980 population Census in PERHEPI 1982, "Laporan  
Konperensi Nasional Ekonomi Pertanian VII" Agustus :22.

According to the Final summary of the Survey on the Rights on land of Native Population (cited in Kano, 1977), there were three kinds of land tenure in Indonesia in the nineteenth century i.e. :

- (1) Heritable individual possession (erfelijk individueel bezit).

Is a form of land tenure in which a particular individual who occupies a plot of land perpetually can hand over the land to the heir either through transfer of the title prior to his death, transfer of the title by will, or transfer of the title at the time of death, and, most typically, can freely dispose of it in such ways as selling, leasing, or pawning. Paddy fields in this form of possession were observed in 452 villages of the total 808 villages surveyed, spreading throughout Java and Madura.

- (2) Communal possession (gemen bezit)

A form of tenure in which an individual (or family) uses the definite land that is only a share of communal land of the village (or of the hamlet as village component).

- (3) Salary fields for officials

Paddy fields assigned to officials for their private use are divided into two categories: those of 'the native chief' such as 'regents' and

districthoof (Bupati and Wedana) residing in cities or towns, and those of village headman or desa of officials residing in villages.

In tenancy relations, there are generally two forms of relations among common peasants : one in which a fixed amount of rent is paid either in money or in kind (unhulled rice), and the other in which a fixed ratio of the harvest is paid as rent, i.e. share-cropping. Share-cropping is called by different names depending on rate of rent (Table 4). This ratio is determined in accordance with the share of the cost borne by owner and by tenant (animal-power, tools, seeds, taxes etc.). It does not seem that these tenancy practices have reached the stage of forming a landlord system as class relation. Closer examination reveals that the motives of the owner in this tenancy practice such as lack of working hands seem to be determining factors (Kano, 1977:31). A survey in West Java (1976) reported sharing arrangement between land-owner and tenant as shown in Table 5.



Table 4 : Names given to share-cropping.

| Ratios of Harvest remaining<br>in hands of Tenants | Names                            |
|--|----------------------------------|
| 1/2  | memaro, nengahkan (divided by 2) |
| 1/3  | mertelu (divided by 3)           |
| 1/4  | merapat (divided by 4)           |
| 1/5  | maralima (divided by 5)          |

Source : Eindresume I, in Kano (19770:31).

Table 5 : Sharing arrangement between land-owner and tenant in six villages in West Java (1976).

| Items                           | Total cases | Sharing arrangement |                        |                    |
|---------------------------------|-------------|---------------------|------------------------|--------------------|
|                                 |             | 50-50%              | All paid by land-owner | All paid by tenant |
| -(number of cases in per cent)- |             |                     |                        |                    |
| Seed                            | 156         | 30                  | 17                     | 53                 |
| Fertilizer                      | 155         | 73                  | 4                      | 23                 |
| Insecticide/                    |             |                     |                        |                    |
| Pesticide                       | 112         | 58                  | 11                     | 31                 |
| Water charges                   | 108         | 30                  | 17                     | 53                 |
| Pre-harvest labour              | 157         | 3                   | 3                      | 94                 |
| Land tax                        | 157         | 3                   | 85                     | 12                 |
| Harvesting labour               | 47          | 77                  | 13                     | 10                 |
| Output                          | 157         | 100                 | 0                      | 0                  |

Source : Household census in six villages in West Java, in Kasryno (1981). Land Tenure and Labour Relations in West Java, Indonesia. A case study in four Villages. Rural Dynamics Series No.17:26.